THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 22

UNITED STATES PATENT AND TRADEMARK OFFICE

_____

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

_____

Ex parte PAAVO LEHTONEN

_____

Appeal No. 1996-3318
Application No. 08/287,056[1]

_____

ON BRIEF

_____

Before WINTERS, WILLIAM F. SMITH, and SPIEGEL, Administrative Patent Judges.

SPIEGEL, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1 through 8, which are all of the claims pending in this application. Claim 1 is illustrative and reads as follows.

> 1. A process of combatting micro-organisms contained in industrial processes, comprising adding glucose oxidase and optionally glucose or a source of glucose to industrial process waters or slurries.

[1] Application for patent filed August 8, 1994. According to appellant, this application is a continuation of application 07/852,129 filed June 15, 1992, now abandoned.

The references relied on by the examiner are:

Baker	2,482,724	Sep. 20, 1949
Hitzman	4,414,334	Nov. 8, 1983
Orndorff	4,478,683	Oct. 23, 1984

Gr. Brit. Patent (Alfa-Laval)1 468 405 Mar. 23, 1977

ISSUES

Claims 1-2 and 7-8 stand rejected under 35 U.S.C. § 112, first paragraph, for lack of enablement.[2] Claims 1-8 stand rejected under 35 U.S.C. § 103 as being unpatentable over Orndorff and Alfa-Laval in view of Hitzman and Baker.

We REVERSE both rejections.

In reaching our decision in this appeal we have given careful consideration to the appellant's specification and claims and to the respective positions articulated by the appellant and the examiner. We make reference to the examiner's answer (Paper No. 21, mailed January 18, 1996) for the examiner's reasoning in support of the rejections and to the appellant's brief (Paper No. 20, filed November 24, 1995) for the appellant's arguments thereagainst.

[2] Recitation of "Claims 1-1 and 7-8 are rejected under 35 U.S.C. § 112, first paragraph, ... " on page 3 of the examiner's answer appears to be an obvious typographical error, with claims 1-2 and 7-8 intended. Moreover, since the final rejection of claims 3-6 under 35 U.S.C. § 112, second paragraph, is not repeated in the answer, it is presumed to have been withdrawn. Ex parte Emm, 118 USPQ 180, 181 (Bd. App. 1957).

OPINION

The claimed invention is directed to a method comprising adding glucose oxidase, and optionally glucose or a source of glucose, to industrial process waters or slurries to combat, i.e., decrease the number of, microorganisms therein.

1. Rejection of claims 1-2 and 7-8 under 35 U.S.C. § 112, first paragraph (enablement)

According to the examiner, the claimed process requires addition of both glucose oxidase and glucose to the industrial process waters or slurries to obtain an industrially significant reduction of microorganisms therein, i.e., addition of glucose is not optional and use of a source of glucose rather than glucose per se is not effective (answer, pages 3-4 and 7-10).[3]

The enablement requirement of 35 U.S.C. § 112, first paragraph, requires that the patent specification enable "those skilled in the art to make and use the full scope of the claimed invention without 'undue experimentation.'" Genentech, Inc. v. Novo Nordisk A/S, 108 F.3d at 165, 42 USPQ2d at 1004 (quoting In re Wright, 999 F.2d 1557, 1561, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993)). A specification of a patent application is presumed to comply with the enablement requirement of 35 U.S.C. § 112, first paragraph.

[3] The examiner cited "M.P.E.P. §§ 706.03(n) and 706.03(z)" (answer, page 3). These sections are entitled "Correspondence of Claims and Disclosure" and "Undue Breadth," respectively, and last appeared in the Sixth Edition of the MPEP (Jan. 1995). See Rev. 1 of the Sixth Edition of the MPEP (Sept. 1995). We observe that both of these sections remained unchanged since at least Rev. 6 of the Fifth Edition of the MPEP (Oct. 1987). Neither section refers to 35 U.S.C. § 112, first paragraph, in whole or by requirement, and thus we will not further refer in this decision to either of these MPEP sections.

An examiner may reject claims in a patent application on the basis of an alleged failure of the applicant to comply with the enablement requirement if the examiner can establish by a preponderance of the evidence that there is reason to doubt the objective truth of the statements contained in the specification. In re Marzocchi, 439 F.2d 220, 223-34, 169 USPQ 367, 369-70 (CCPA 1970). In our opinion, the examiner has not sustained her burden for making the enablement rejection for the following reasons.

First, the data in specification Tables II and VII show a decrease in microbe count following addition of glucose oxidase alone to a starch slurry and a groundwood slurry, respectively (in Table II, page 6, compare the microbe count for test nos. 1 and 5, especially at 1 and 3 days; in Table VII, page 11, compare the bacteria count for test nos. 1 and 4, especially at 0 and 5 hours). Second, the claimed process does not require obtaining and/or maintaining any particular level of microbe content within the industrial process water or slurry for any particular time period.[4] Third, it appears inconsistent for the examiner to maintain on the one hand that one of ordinary skill in the art would have recognized (i) that a liquid to which glucose oxidase is being added

[4] We note that the examiner has not rejected the claimed invention on the basis that an "industrially significant" reduction of microorganisms in industrial process waters or slurries is required for utility (see answer, paragraph bridging pages 9-10).

may itself contain glucose substrate, (ii) that additional glucose substrate may be added to the liquid and (iii) that auxiliary enzymes may be added to the liquid to release glucose from a precursor substance therein, i.e., a "source of glucose" (see e.g., Alfa-Laval, pages 2-3; Baker, col. 4, line 75 - col. 5, line 18), and on the other hand to argue that those skilled in the art would have found the data presented in the specification unpredictable. In other words, it appears that those skilled in the art would have reasonably expected a glucose oxidase catalyzed biocide to be more effective and/or longer lasting in a system which added glucose substrate to a liquid, than in a system which relied solely on any endogenous glucose in the liquid to provide the needed glucose substrate. Therefore, the rejection under 35 U.S.C. § 112, first paragraph, is reversed.

2. Rejection of claims 1-8 under 35 U.S.C. § 103 over Orndorff, Alfa-Laval, Hitzman and Baker

To establish a prima facie case of obviousness, there must be both some suggestion or motivation to modify the reference or combine reference teachings and a reasonable expectation of success. The prior art must teach or suggest all the claim limitations. In re Vaeck, 947 F.2d 488, 493, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991).

Orndorff describes a dehydrogenase enzyme catalyzed biocide system for use in industrial process waters wherein added peroxidase enzyme in the presence of hydrogen peroxide oxidizes phenolic compounds present in or added to a process stream to generate antibacterial activity (col. 1, line 46 - col. 2, line 22).

Alfa-Laval discloses treating a liquid, e.g., milk, subject to microbial deterioration on storage by enzymatically generating sufficient hydrogen peroxide in situ to reduce or inhibit the action of microorganisms in the liquid (page 1, lines 69-77 and page 1, line 90 - page 2, line 3).

According to the examiner,

> It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the glucose oxidase/glucose system [of Alfa-Laval] for the enzyme system of Orndorff with the expectation that the hydrogen peroxide known to be produced as a result of the interaction of the two components would have a microbiocidal effect in industrial process streams ... . [Answer, page 13.]

However, the examiner has failed to explain where the suggestion or motivation to substitute the biocide system/compound of Alfa-Laval for the biocide system/compound of Orndorff is found. While both Orndorff and Alfa-Laval disclose enzymatically catalyzed biocide systems, these systems differ in the biocide generated, the catalyzed

reactants and the nature of the liquids treated. The biocide generated by Orndorff is an oxidized phenolic compound, e.g.,

$$\mathbf{H_2O_2} + \text{quinone} \xrightarrow{\text{hydrogen peroxidase}} 2\ H_2O + \text{hydroquinone},$$

whereas the biocide generated by Alfa-Laval is hydrogen peroxide, i.e.,

$$\text{glucose} + O_2 \xrightarrow{\text{glucose oxidase}} \text{gluconic acid} + \mathbf{H_2O_2}.$$

The phenolic compound which is oxidized to provide the biocide of Orndorff is endogenous to the liquid being treated, i.e., to industrial process waters. The examiner has not established that milk contains such phenolic compounds and admits that "the liquids of industrial process streams are not distinctly disclosed" by Alfa-Laval (answer, page 5).

The examiner does not point out, and we do not find, where Hitzman and/or Baker supply the missing suggestion or motivation. Hitzman removes ambient oxygen in liquids susceptible to corrosion and oxidative degradation, e.g., oil field fluids, circulating water systems, alcoholic beverages and foodstuffs, with an alcohol/alcohol oxidase system. Baker removes oxygen from canned milk and other industrial products using various oxidase/substrate systems (cols. 1-2). Rather, both Hitzman and Baker suggest that the presence of hydrogen peroxide may be undesirable in some liquids

and disclose adding catalase to remove the hydrogen peroxide as it is produced (In Hitzman see col. 3, lines 14-18, 57-60; col. 4, lines 16-20; and EXAMPLE II, cols. 14-15. In Baker see col. 3, lines 3-30). Indeed, Example 3 in Baker describes adding lactase, glucose oxidase and catalase to milk, wherein the lactase converts the lactose in the milk to glucose, the glucose oxidase oxidizes the glucose and the catalase removes the hydrogen peroxide by-product as it is produced (paragraph bridging cols. 4-5).

The only place we find the suggestion to combat microorganisms in industrial processes by adding glucose oxidase and optionally glucose or a source of glucose to industrial process waters or slurries is in the appellant's specification. Thus, we find that the examiner has relied on impermissible hindsight in making her determination of obviousness. In re Fritch, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1784 (Fed. Cir. 1992) ("It is impermissible to engage in hindsight reconstruction of the claimed invention, using the applicant's structure as a template and selecting elements from references to fill the gaps."). Therefore, we conclude that the examiner has not established a prima facie case of obviousness as to claims 1-8 over Orndorff, Alfa-Laval, Hitzman and Baker.

CONCLUSION

To summarize, the decisions of the examiner to reject claims 1-2 and 7-8 under 35 U.S.C. § 112, first paragraph, for lack of enablement and to reject claims 1-8 under 35 U.S.C. § 103 as being unpatentable over Orndorff and Alfa-Laval in view of Hitzman and Baker are reversed.

REVERSED

SHERMAN D. WINTERS Administrative Patent Judge	)
WILLIAM F. SMITH Administrative Patent Judge	) BOARD OF PATENT) APPEALS) AND) INTERFERENCES
CAROL A. SPIEGEL Administrative Patent Judge	)

CHRISTOPHER L. STONE
GENENCOR INTERNATIONAL, INC.
180 KIMBALL WAY
SO. SAN FRANCISCO, CA 94080

CAS/jlb